Natural Engineer

Version 4.4.2

Release Notes

software AG

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ABOUT THIS MANUAL

Purpose of this manual

This manual contains the Release Notes for Natural Engineer version 4.4.2. The information contained in this manual describes the new and modified features of Natural Engineer version 4.4.2.

Any obsolete functions are also documented for users of previously released versions of Natural Engineer.

Target Audience

The target audience for this manual is intended to be any User of Natural Engineer version 4.4.2 as well as Systems Administrators responsible for installing and configuring the product.

Typographical Conventions used in this manual

The following conventions are used throughout this manual:

UPPERCASE TIMES	Commands, statements, names of programs and utilities referred to in text paragraphs appear in normal (Times) uppercase.
`UPPERCASE BOLD COURIER`	In illustrations or examples of commands, items in uppercase bold courier must be typed in as they appear.
< >	Items in angled brackets are placeholders for user-supplied information. For example, if asked to enter <file number>, you must type the number of the required file.
<u>Underlined</u>	Underlined parts of text are hyperlinks to other parts within the online source manual. This manual was written in MS-Word 97 using the "hyperlink" feature.

The following symbols are used for instructions:

$\Rightarrow$	Marks the beginning of an instruction set.
❏	Indicates that the instruction set consists of a single step.
1.	Indicates the first of a number of steps.

How this manual is organized

This manual is organized to reflect the new features/enhancements, changes/modifications and documentation updates available with the release of Natural Engineer version 4.4.2.

This manual should be read carefully before installing and using the product.

Chapter	Contents
1	Provides an overview of the new features / enhancements for this release along with any product highlights.
2	Provides details of any existing functionality and / or any functions that have become obsolete for this release.
3	Provides a list of the documentation available for this release along with manual order numbers.

Terminology

It is assumed that you are familiar with general Natural and mainframe terminology, as well as the terms and concepts relating to Microsoft Windows operating systems. This section explains some terms that are specific to the Natural Engineer product.

Analysis

The Analysis process of Natural Engineer searches application data within the Natural Engineer Repository, according to specified Search Criteria and generates reports on the search results.

Application

An Application is a library or group of related libraries, which define a complete Application. In Natural Engineer, the Application can have a one-to-one relationship with a single library of the same name, or a library of a different name, as well as related steplibs. The Application refers to all the source code from these libraries, which Natural Engineer loads into the Repository.

Browser

An Internet Browser such as Microsoft Internet Explorer or Netscape.

Category

Categories in Natural Engineer specify whether and how a Modification is applied to the Natural code. Valid categories are: Automatic change, Manual change, Reject the default Modification, No change to the data item, and the data item is in Generated Code.

A category is further broken down according to type of change (for example: Keyword, Literal, Data Item, Database Access, Definition).

Consistency

An option in the Analysis process that causes Natural Engineer to trace an Impact through the code, using left and right argument resolution to identify further code impacted by the code found.

Environment

The Environment process is the means by which Natural Engineer generates a structured view of the application code in the Natural Engineer Repository. This provides application analysis reports and inventory information on the application and is used as the basis for Impact Analysis.

Exception

An Exception is an Item identified as impacted that does not require a Modification. Where there are a few similar Exception Items, they can be treated as Exceptions, and rejected in the Modification review process. Where there are many similar (therefore not Exceptions), consideration should be given to changing the Search Criteria so they are not identified as impacted in the first place.

Generated Code

This is code which has been generated by a Natural code generator, such as Construct, and which is not normally modified directly in the Natural editor.

Impact

An Impact is an instance of a Natural code Item; e.g., data item or statement (a "hit" scored by the Analysis process) that matches the defined Search Criteria used in the Analysis process.

Iteration

An Iteration is one examination cycle of a field identified according to the specified Search Criteria. For example, one Iteration is reading the field right to left. Multiple Iterations are performed when the option of 'Consistency' or Multi Search is requested for Analysis, and Natural Engineer performs as many Iterations as necessary to exhaust all possibilities of expressing and tracing the field, and can be limited by a setting in the NATENG.INI file.

Library

A single library of source code, which exists in the Natural system file.

Modification

A Modification is a change suggested or made to an object or data item resulting in the required compliance of that object or data item. Modifications in Natural Engineer are classified according to Category and Type.

Presentation Split Process

The Presentation Split Process is a sub-function of the Object Builder function that removes screen I/O statements from current application objects and places them in generated subprograms.

Soft Link

A Soft Link is where a link between two objects has been defined using an alphanumeric variable rather than a literal constant.

Technical Split Process

The Technical Split Process is a sub-function of the Object Builder function that results in the encapsulation of each database access within the application, into a sub-program so that the application is separated into 'presentation and logic' and 'database access'.

Type

The Type of Modification available, for example: Data Item, Keyword and Literal.

TLM

Text Logic Members are used to contain the code required to support inclusion of common code into the application. An example of this is the code to include into an application before updating a database.

Related Literature

The complete set of Natural Engineer manuals consists of:

1   Natural Engineer Concepts and Facilities (NEE442-006ALL)

The Concepts and Facilities manual describes the many application systems problems and solutions offered by Natural Engineer, providing some guidelines and usage that can be applied to Natural applications.

2   Natural Engineer Release Notes (NEE442-008ALL)

The Release Notes describe all the information relating to the new features, upgrades to existing functions and documentation updates that have been applied to Natural Engineer.

3   Natural Engineer Installation Guide (NEE442-010ALL)

The Installation Guide provides information on how to install Natural Engineer on both PC and mainframe platforms.

4   Natural Engineer Administration Guide (NEE442-040WIN)
Natural Engineer Administration Guide (NEE442-040MFR)

The Administration Guide provides information on all the various control settings available to control the usage of the different functions within Natural Engineer.

5   Natural Engineer Application Management (NEE442-020WIN)
Natural Engineer Application Management (NEE442-020MFR)

The Application Management manual describes all the functions required to add Natural applications into the Repository.

6   Natural Engineer Application Documentation (NEE442-022WIN)
Natural Engineer Application Documentation (NEE442-022MFR)

The Application Documentation manual describes all the available functions to document a Natural application within the Repository. These functions will help enhance / supplement any existing systems documentation such as BSD / CSD / Specifications etc.

7   Natural Engineer Application Analysis and Modification (NEE442-023WIN)
Natural Engineer Application Analysis and Modification (NEE442-023MFR)

The Application Analysis and Modification manual describes all the available functions to carry out analysis of Natural applications; including basic keyword searches. The modification process is described and detailed to show how it can be applied to modify single selected objects within a Natural application, or the entire Natural application in one single execution.

8   Natural Engineer Application Restructuring (NEE442-024WIN)
Natural Engineer Application Restructuring (NEE442-024MFR)

The Application Restructuring manual describes the analysis and modification functionality required to carryout some of the more sophisticated functions such as Object Builder.

9   Natural Engineer Utilities (NEE442-080WIN)
Natural Engineer Utilities (NEE442-080MFR)

The Utilities manual describes all the available utilities found within Natural Engineer and, when and how they should be used.

10   Natural Engineer Reporting (NEE442-025ALL)

The Reporting manual describes each of the reports available in detail, providing report layouts, how to trigger the report and when the report data becomes available. The various report-producing mediums within Natural Engineer are also described.

11   Natural Engineer Batch Processing [Mainframes] (NEE442-026MFR)

The Batch Processing manual describes the various batch jobs (JCL) and their functionality.

12   Natural Engineer WebStar (NWS442-020ALL)

The WebStar manual describes the concepts and facilities, installation and configuration options, how to web enable a Natural application and how to create and execute Natural Short Transactions using the Natural Engineer add-on component WebStar.

13   Natural Engineer WebStar Release Notes (NWS442-008ALL)

The Release Notes describe all the information relating to the new features, upgrades to existing functions and documentation updates that have been applied to the Natural Engineer add-on component WebStar.

14   Natural Engineer Messages and Codes (NEE442-060ALL)

The Messages and Codes manual describes the various messages and codes produced by Natural Engineer.

FUNCTIONAL CHANGES AND ENHANCEMENTS

Chapter Overview

This chapter covers the new features and enhancements that are available in Natural Engineer version 4.4.2.

The main new features and enhancements are summarized in the following sections:

General

- Migrating to Version 4.4.2.

New Features

- New Message Codes added to Extract and Load processes.

- Mode Conversion Function.

- Database Data Requirements Option

Changes and Enhancements

- MVSNAT22TO31.

- CODE OPTIMIZATION.

- New Impact Search Value IS(format).

- Example object library NEEEXPG.

Additional Entries in CINI and NATENG.INI file

- NETWORK setting for SPoD Environments

- LISTBOXMAX Limits

General

Migrating to Version 4.4.2

From Version 4.3.1 Base

If you are upgrading from Natural Engineer version 4.3.1 Base Release and have extracted and loaded applications using language codes you will need to perform the following tasks;

To convert internal language code cross reference records to the new structure run the NEE4311U object in the SYSNEE library.

Note: This program is completely re-executable and should be executed in a Natural session invoked using the NATENG Natural parameter module.

From Version 4.3.1.1 or 4.3.1.2

If you are upgrading from Natural Engineer version 4.3.1.1 or 4.3.1.2 you will need to perform the following tasks:

[i] Add the following fields to the FDT using the DBA Workbench:

```
01,Z0
02,Z1,7,P,NU
02,Z2,4,B,NU
02,Z3,4,B,NU
01,Z5,15,A,NU
```

[ii] Increase the field AW on the FDT from 32 to 45 bytes using the DBA Workbench.

[iii] Invert the superdescriptor, REC-TYPE-LIB-PGM-TIMESTAMP-A, using DBA Workbench:

```
NC=RT(1,1),AA(1,8),AB(1,8),Z5(1,15)
```

[iv] Invert the superdescriptor, REC-TYPE-AUD-LIB-PGM-TIMESTAMP-A, using DBA Workbench:

```
ND=RT(1,1),UL(1,8),AB(1,8),Z5(1,15)
```

[v] To convert internal timestamps to the new structure run the NEE4313U object in the SYSNEE library.

Note: This program is completely re-executable and should be executed in a Natural session invoked using the NATENG Natural parameter module.

Conversion is complete.

From Version 4.3.1.3

If you are upgrading from Natural Engineer version 4.3.1.3 there are no conversion tasks required.

From Version 4.4.1 Base

If you are upgrading from Natural Engineer version 4.4.1 Base Release there are no conversion tasks required.

New Features

New Message Codes added to Extract and Load Processes

New message codes have been added to the messages produced by the Extract and Load processes.

Extract message codes use the following format:

NEE1nnn 'message-text'	
where:	
NEE1	standard Extract error code prefix.
nnn	unique sequential number assigned for each message.
'message-text'	describes the error.

Load message codes use the following format:

NEE2nnn 'message-text'	
where:	
NEE2	standard Load error code prefix.
nnn	unique sequential number assigned for each message.
'message-text'	describes the error.

A new Messages and Codes manual has been introduced to provide an explanation and recommended action for each message.

Mode Conversion Function

The Mode Conversion function is available from the Utilities menu.

The Mode Conversion option provides the facility to convert Natural Reporting mode objects into Natural Structured mode objects.

Applications that are to be converted are extracted and loaded into the Repository using the Extract and Load processes. The modification library (where the converted objects will reside) is controlled within the Application Preferences screen. The Mode Conversion option can be used once the application has been loaded into the Repository.

Note: For more information on the Application Preferences, Extract and Load processes refer to the Application Management for Windows and Application Management for Mainframes manuals.

The Mode Conversion process is split into two sub-processes:

1. Global Data

The Global data requirements within an application are specified first and if required, a new GDA object can be generated. Once generated, it will contain all the Global data referenced within the application.

2. Object Conversion

Objects to be converted can be selected individually, in groups, or all objects within the application. The GDA option specified will be taken into account and the correct references added to the converted objects.

Mode Conversion can only be applied to the following Natural object types:

- Programs
- Subprograms
- Subroutines
- Helproutines
- Copycodes

After the Mode Conversion process has completed, the conversion details are displayed on the Mode Conversion Log window.

Audit trail records are generated for each object converted (including new GDA objects) and can be viewed using the Change Management Tracking (CMT) option.

New Mode Conversion GDA Information Window

The Mode Conversion GDA Information window displays the Global data usage information for the application along with the default options that will be displayed on the Mode Conversion GDA Options screen.

The following Figure 1-1 illustrates an example of the new Mode Conversion GDA Information window.

Figure 1-1 Example of the new Mode Conversion GDA Information window

New Mode Conversion GDA Options Screen

The Mode Conversion GDA Options screen allows you to specify what GDA processing is to be applied to the converted application.

The following Figure 1-2 illustrates the new Mode Conversion GDA Options screen.
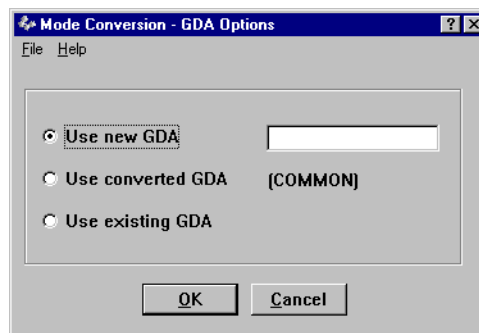

Figure 1-2 New Mode Conversion GDA Options screen

New Mode Conversion Object Selection Screen

The Mode Conversion Object Selection screen allows you to select the objects that are to be converted for the application.

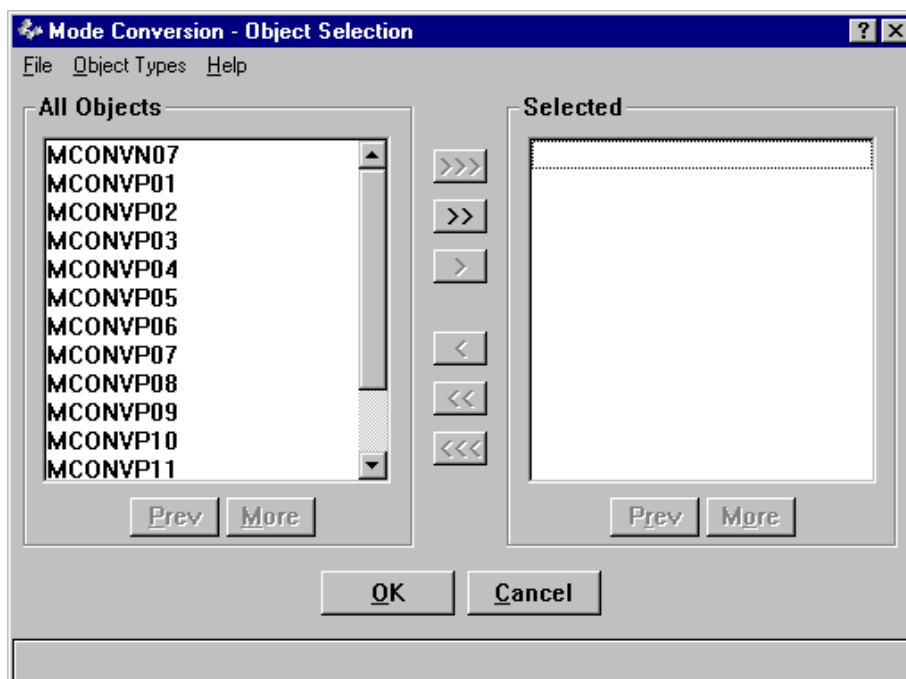The following Figure 1-3 illustrates the new Mode Conversion Object Selection screen.

Figure 1-3 New Mode Conversion Object Selection screen

New Mode Conversion Information Window

The Mode Conversion Information window summarizes the GDA options to be applied during the conversion process. It is possible at this stage to cancel the conversion process and make new object selection and/or change the GDA options to be used.

The following Figure 1-4 illustrates an example of the new Mode Conversion Information screen.
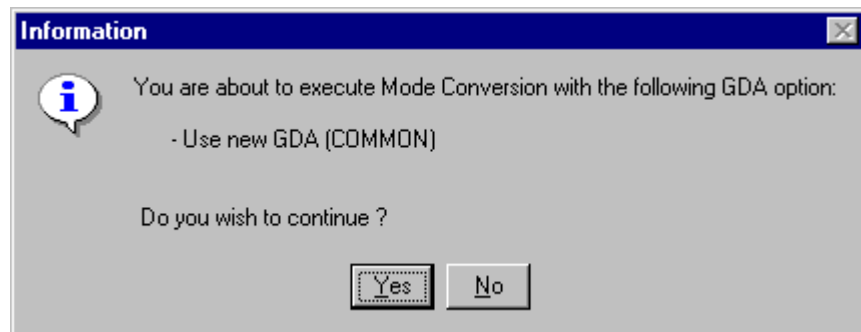
Figure 1-4 Example of the new Mode Conversion Information screen

New Mode Conversion Log Window

The Mode Conversion Log window is displayed at the end of a conversion process. The Mode conversion log window will contain a list of entries showing the conversion process activity.

The following Figure 1-5 illustrates the new Mode Conversion Log screen showing object conversion details.
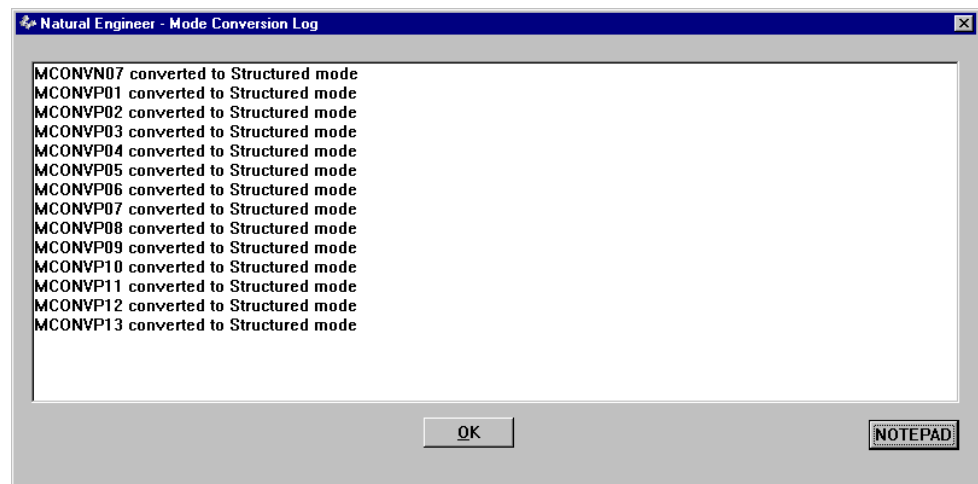

Figure 1-5 New Mode Conversion Log screen showing object conversion details

Database Data Requirements Option

This option produces a report to show the database data requirements for an application, providing report refinement options to select the DDM objects and DDM fields to be included in the report.

Example of reports that invoke this option:

- Environment➔Application Reports
  - Database Data Requirements

DDM Selection Screen

The DDM Selection screen provides the options to select a single DDM, a group of DDMs or all the DDMs referenced within an application.

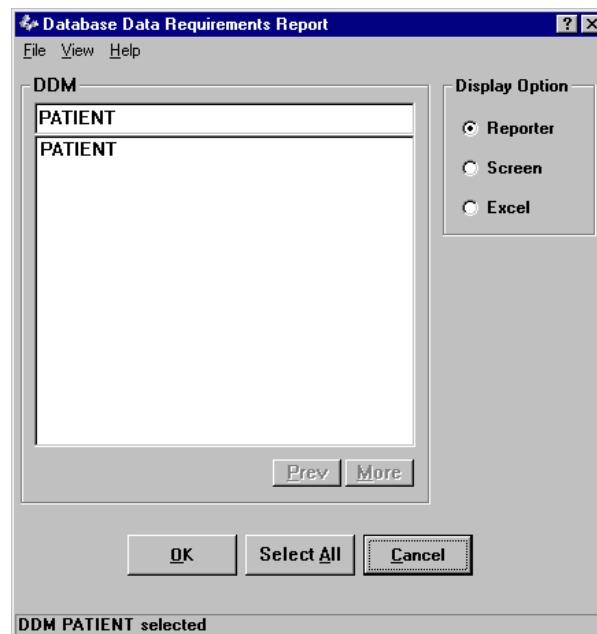The following Figure 1-6 illustrates the DDM Selection screen.

Figure 1-6 DDM Selection screen

DDM Field Selection Screen

The DDM Field Selection screen provides the options to select a single DDM field, a group of DDM fields or all the DDM fields for the currently selected DDM.

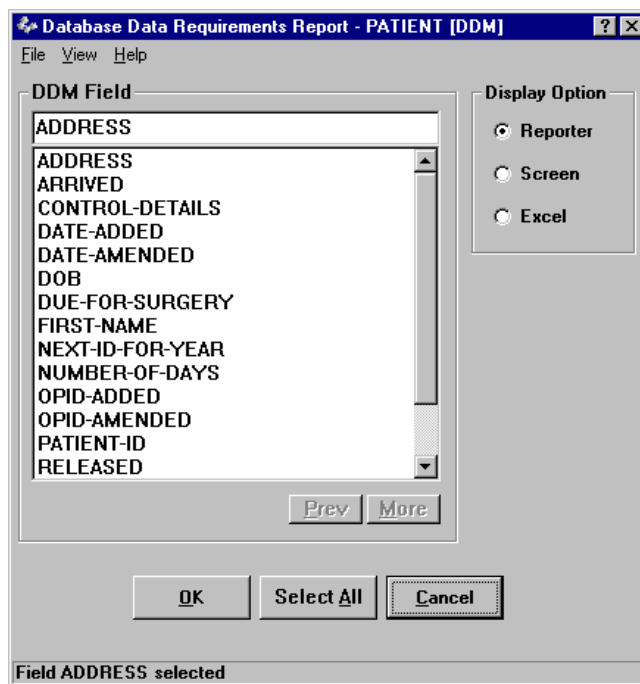The following Figure 1-7 illustrates the DDM Field Selection screen.

Figure 1-7 DDM Field Selection screen

Changes & Enhancements

MVSNAT22TO31

The MVSNAT22TO31 option "Assign numeric values to alpha fields" (NEE Modification type SAG06 and SAG06REP) has been removed.

CODE OPTIMIZATION

The CODE OPTIMIZATION option "Replace MOVE INDEXED statement with appropriate MOVE" has been enhanced to cater for the following:

- MOVE INDEXED statements utilizing contiguous storage will produce a message "Object 'object-name' contains a contiguous MOVE INDEXED statement. This is marked for manual change." The MOVE INDEXED statement will be marked for manual change and have a comment of "REASON: CONTIGUOUS MOVE INDEXED" appended.

  Example of contiguous MOVE INDEXED statement:

  ```
  0010 RESET #FIELD-1(A10) #FIELD-2(A10) #DISPLAY(A10)
  0020 MOVE 'CORRECT' TO #FIELD-1
  0030 MOVE 'WRONG' TO #FIELD-2
  0040 MOVE INDEXED #FIELD-1<2> TO #DISPLAY
  0050 WRITE #DISPLAY
  ```

- MOVE INDEXED statements for DDM fields will produce a message "Object 'object-name' contains a view with a MOVE INDEXED statement. This is marked for manual change." The MOVE INDEXED statement will be marked for manual change and have a comment of "REASON: FIELD IS FROM A VIEW" appended.

  Example of MOVE INDEXED statement for DDM fields:

  ```
  0010 RESET #DISPLAY-ADDRESS(A20)
  0020 READ EMPLOYEES BY NAME
  0030   OBTAIN ADDRESS-LINE(1:4)
  0040   MOVE INDEXED ADDRESS-LINE<1> TO #DISPLAY-ADDRESS
  0050 LOOP
  ```

New Impact Search Value IS(format)

A new Impact search value of 'IS(format)' is available for use with the Impact search keyword 'IF'.

This search value will impact any usage of the IS option within an IF statement.

Note: The IS option can be used to check whether the content of an alphanumeric field can be converted to a specific other format. For example, the IS option can be used to check the content of a field before the mathematical function VAL (extract numeric value from an alphanumeric field) is used to ensure that it will not result in a runtime error.

The search value IS(format) is specified in the search value field on the Impact Criteria screen and is only valid with the search keyword IF, where '(format)' is the desired format and length. Examples of possible search values are:

IS(N7)

IS(I002)

IS(D)

For Example:

```
::::
0090 DEFINE DATA LOCAL
0100 01 #ALPHA              (A7)
0110 01 #NUMERIC            (N7)
0120 END-DEFINE
::::
0250 IF #ALPHA IS(N5)
0260   COMPUTE #NUMERIC := VAL(#ALPHA) * 1
0270   WRITE #NUMERIC
0280 END-IF
::::
```

Using Impact criteria of search keyword 'IF' and search value 'IS(N5)' would provide Impact results for statement line number 0250.

Example Object Library NEEEXPG

The example object library NEEEXPG supplied with Natural Engineer has been updated to include new objects that can be used with the Mode Conversion function.

Object Name	Description
MCONVMO7	Map object used by MCONVN07.
MCONVN07	Subprogram with STORE/GET/UPDATE/DELETE statements.
MCONVP01	Program with various format and length definitions.
MCONVP02	Program with in-line Global data definition.
MCONVP03	Program with single READ statement.
MCONVP04	Program with multiple READ statements and multiple statements per statement line.
MCONVP05	Program with multiple READ statements.
MCONVP06	Program with statement reference notation for FIND statements.
MCONVP07	Program with FIND/STORE/GET/UPDATE/DELETE statements.
MCONVP08	Program with MOVE INDEXED statements.
MCONVP09	Program with open-ended ESCAPE statements.
MCONVP10	Program with various 'LOOP' type statements.
MCONVP11	Program with various conditional blocks.
MCONVP12	Program with ON ERROR/OBTAIN/FIND/SORT statements.
MCONVP13	Program with READ WORK FILE statement.

Additional Entries in the CINI and NATENG.INI file

The following changes have been made to the INI and CINI files for Natural Engineer version 4.4.2. Please review the appropriate section of the Natural Engineer User Guide for a detailed explanation about each entry in the INI file. On the PC, the NATENG.INI file may be maintained via the Options→Administration→Initialization Settings option from the main menu.

New and Modified Settings

NETWORK setting for SPoD Environments

Used to control the Adabas calls to the Repository when running Natural Engineer in a SPoD environment.

The NETWORK parameter will determine where the Adabas calls to the Repository are issued, either in the remote environment (mainframe) or in the local environment (PC). It is located under the ENVIRONMENT group.

```
[ENVIRONMENT]

NETWORK=
```

Possible values are:

N   All Adabas calls to the Repository are issued on the remote environment.

Y   All Adabas calls to the Repository are issued on the local environment.

Note: The NETWORK= parameter is only valid in the NATENG.INI file for the PC.

LISTBOXMAX Limits

The LISTBOXMAX parameter is now limited to the range 1-200.

It is located under the LIMITS group.

2

OBSOLETE FUNCTIONALITY

Chapter Overview

This chapter covers all the functionality that has been removed from Natural Engineer version 4.4.2 and is now obsolete.

The following list summarizes the obsolete functions:

- MVSNAT22TO31 option 'Assign numeric values to alpha fields'.

Obsolete Functionality

MVSNAT22TO31 option 'Assign numeric values to alpha fields'

The MVSNAT22TO31 option "Assign numeric values to alpha fields" (NEE Modification type SAG06 and SAG06REP) has been removed.

DOCUMENTATION

Chapter Overview

This chapter covers the documentation changes made for Natural Engineer version 4.4.2.

Documentation Updates

The documentation set for Natural Engineer has been updated to reflect the changes and additions provided with Natural Engineer version 4.4.2.

The following list provides a list of updated documentation and their respective order numbers:

Manual Title	Order number
Natural Engineer Concepts and Facilities	NEE442-006ALL
Natural Engineer Version 4.4.2 Release Notes	NEE442-008ALL
Natural Engineer Installation Guide	NEE442-010ALL
Natural Engineer Administration Guide	NEE442-040WIN NEE442-040MFR
Natural Engineer Application Management	NEE442-020WIN NEE442-020MFR
Natural Engineer Application Documentation	NEE442-022WIN NEE442-022MFR
Natural Engineer Application Analysis and Modification	NEE442-023WIN NEE442-023MFR
Natural Engineer Application Restructuring	NEE442-024WIN NEE442-024MFR
Natural Engineer Utilities	NEE442-080WIN NEE442-080MFR

Manual Title	Order number
Natural Engineer Reporting	NEE442-025ALL
Natural Engineer Batch Processing [Mainframes]	NEE442-026MFR
Natural Engineer Messages and Codes	NEE442-060ALL

New Compiled HTML Help

Natural Engineer now supplies online help for the PC in compiled HTML format. If you encounter an error message when invoking online help for the first time, you probably require an update to your Windows help system. Please check the following Microsoft web page for the appropriate update file:

http://msdn.microsoft.com/library/default.asp?url=/library/en-us/htmlhelp/html/ hwMicrosoftHTMLHelpDownloads.asp

A version of the update files can also be found in the subdirectory '\Help' on the Natural Engineer Product CD.

You can find further information about HTML help:

http://msdn.microsoft.com/library/default.asp?url=/library/en-us/htmlhelp/html/ vsconHH1Start.asp?frame=true

Note: In order to access HTML Help, the underlying components of Microsoft Internet Explorer 4.x (or later) must be installed.

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